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BENTES, Margarida^{}; MATEUS, Maria do Céu^{*}; ESTEVENS, Salomé^{*};
VALENTE, Maria do Céu^{*} and VEERTRES, James[†]*

^{} IGIF, Ministry of Health*

[†] 3M - Health Information Systems

**TOWARDS A MORE COMPREHENSIVE FINANCING SYSTEM
FOR THE PORTUGUESE NHS HOSPITALS**

WORK IN PROGRESS

SUMMARY

Ambulatory Patient Groups - APGs - are a patient classification system that explains the amount and type of resources used in an ambulatory visit. A project has been in progress in Portugal since 1995 to ascertain the feasibility of implementing APGs in the outpatient sector of NHS hospitals. This system requires that certain major issues be resolved before implementation, mainly due to organisational and resource constraints as well as to outpatient procedures coding schemes. Same day surgery, however, lies on the edge of inpatient and outpatient procedures. Thus, as an interim solution, work is also being conducted to examine the adequacy of using DRGs as a basis for classifying and financing same day stays for a set of eligible DRGs.

1. INTRODUCTION

There is a growing trend to shift care from inpatient to ambulatory settings as technological advancements, laser applications, and new concepts of health care enable increasingly complex cases to be treated in same day surgery units. Portugal is not an exception to this trend. However, the current case-mix based resource allocation model for the National Health Service (NHS) hospitals only includes inpatient care. All outpatient visits receive the same relatively low budgetary credit (depending on hospital type), irrespective of whether the visit was medical or surgical.

In response to this problem, hospitals tend to code outpatient procedures, including same day surgeries, as zero day inpatient stays, in an attempt to maximise revenue. In fact, the percentage of zero day stays to total discharges of surgical DRGs is around 7% in the last years, as shown in Table 1.

TABLE 1

Year	Surgical Patients	Zero day patients	Percentage
1993	244 405	16 853	6.9%
1994	253 865	16 526	6.5%
1995	254 040	17 440	6.9%

In this event, the case is paid through the DRG system as a short stay outlier or inlier admission, depending on the DRG assigned. This is a clear distortion of the inpatient DRG system in that DRGs are neither designed nor intended to classify ambulatory visits. Although the Ministry of Health has been softly pressuring the hospitals to classify as DRGs only inpatient care, this practice has been allowed to continue in order to encourage hospitals to shift care to the outpatient arena wherever possible. As a solution, however, this practice is less than desirable. In response, a decision has been taken to base resource allocations for ambulatory care on Ambulatory Patients Groups (APGs), following relatively brief testing to determine what kinds of minor adjustments may be merited.

2. ISSUES AND PROGRESS IN IMPLEMENTING APGs

APGs are a patient classification system designed to explain the amount and type of resources used in an ambulatory care visit. The visit represents the contact between the patient and the health care provider(s), in any outpatient setting: outpatient clinic, day hospital, emergency room, ambulatory surgery or ancillary services; and can be done for a procedure, a medical evaluation or simply for an ancillary service. Thus the model considers three different APG categories: the Significant Procedure and Therapy APGs, the Ancillary Test and Procedure APGs, the Medical APGs, plus the Error APGs¹.

A project is in progress since 1995 in Portugal to pilo-test APGs in NHS hospitals. Eight hospitals have been selected to participate at the outpatient clinics of Internal Medicine, General Surgery, Cardiology, Ophtalmology, Orthopedics, ENT, Pneumology and Urology. The work team is composed by people from IGIF (hospital managers and economists), people from the chosen hospitals (hospital managers, physicians, informatic engineers, administrative workers) and people from 3M - HIS who act as consultants.

Following a preliminary assay at the hospitals, to decide on the most adequate data collection and coding processes, actions already taken include: a) the development of an uniform basic data set for outpatient visits and day hospital stays; b) the preparation of lists of the most common diagnoses and procedures for each clinical speciality, to be pre-coded; c) a prototype of a microcomputer based abstracting and statistical package which includes 3M APG grouper module.

There are still issues that need to be resolved which result from difficulties of the development context:

1. APGs require more extensive information regarding certain kinds of procedures, (specially ancillary tests) that can be coded using ICD-9-CM. Although a list of codes and associated relative values has been completed by pannels of Portuguese physicians, for Imaging, Cardiology, Clinical Pathology, Ophtalmology, Gastrentology, Pneumology, MFR and Urology, there is still uncertainty as to the approval of these codes for hospital use. One alternative is to use a set of extra codes developed by 3M (ICD-9-PLUS CODES) but the final decision will only be taken after the appropriate balance between clinical acceptance and easiness of use of both approaches can be assessed.

2. The large quantity of cases seen at the outpatient setting involves the use of more resources, both for data collection and for coding, than is the case for the inpatient setting. Considering that the value of the information should be greater than the cost of its collection, automated forms with clinic-specific pre-coded diagnostic and procedural information (codes for common procedures, by speciality) are being developed for this purpose. These forms, however, still have to be subject to validation before actual use, specially in respect to the diagnostic and procedural content.

Given the constraints referred above, APG implementation cannot occur before 1998, at best. However, the problem of zero day stays requires a more rapid response than is possible using APGs. Therefore, as an interim (and admittedly second best) step, it has been decided to use DRGs, to the extent possible, to pay for ambulatory surgical procedures.

3. AN INTERIM SOLUTION BASED ON DRGs

There are certain limitations involved in using DRGs to fund ambulatory care, and there are issues which must be resolved to apply DRGs to zero day stays in Portugal. The purpose of this section is to describe these limitations, the issues, and their resolution.

3.1. Limitations

The three main limitations inherent in using DRG to pay for ambulatory surgery are:

1. As DRG assignment is primarily based on the principal diagnosis, a procedure may fall into one or more DRGs. APGs use significant procedure (yes/no) as the initial split, so a given procedure is classified into one and only one APG.

2. Only one DRG is assigned to each inpatient episode. A particular outpatient visit may, under certain unusual circumstances, involve the use of expensive tests. While one might argue that this issue is handled by averaging, it imposes an untoward degree of risk on the provider, and could lead to a reduction of quality of care. Multiple APGs can be assigned to a single visit, eliminating this problem.

3. APGs are intended to classify all ambulatory care including procedures, medical visits, and visits which involve relatively expensive ancillary services. DRGs are not useful in classifying medical and ancillary visits, and cannot classify all ambulatory surgeries, in part, due to limitations of ICD-9-CM. This means that only some zero day stays can be captured by the DRGs, and most zero day stays, both medical and surgical, will need to be paid in a different way.

These limitations cannot be eliminated, and this is the reason that DRGs are seen as an interim solution until APGs can be implemented.

3.2. Issues

As noted above, despite these problems, continuing the present system is less satisfactory than attempting to use DRGs as an interim solution for zero day stay cases. In order to use DRGs to pay for same day surgery, certain practical issues must be resolved. These include:

1. The ICD-9-CM procedure codes which can represent ambulatory surgery must be identified.
2. The DRGs which are eligible for payment as ambulatory surgery must be identified, remembering that a procedure can be classified into more than one DRG.
3. A value must be established for these "eligible" DRGs.
4. All other zero day stays, both medical and surgical, must also be assigned a value.
5. Hospital costs, as submitted, include the cost of these zero day stays. Thus cost must be removed from the inpatient hospital budget.

The remainder of this paper presents our resolutions of these practical issues.

3.3. Resolutions

Eligible procedures: The Department of Health in Ireland developed a list of ICD-9-CM procedure codes representing procedures which, in the opinion of local physicians, can be done on an outpatient basis². This list was the starting point for the development of a similar list for Portugal. The content was reviewed and codes were assigned to DRGs. Codes which could not be mapped to a procedure DRG, e.g., endoscopy, were eliminated as well as codes which often/always mapped to HCFA DRGs in MDCs 15, 18, 19, 20, and 23.

Fifty six selected hospitals were sent a survey on their practice concerning the use of ambulatory surgery. To avoid confusion, the survey defined ambulatory surgery as a scheduled procedure, requiring operating room facilities, but no overnight stay. The survey included the list of potentially outpatient procedures, described above. Of these, usable responses were received from thirty four hospitals (60%).

Physicians in these hospitals were asked whether the procedure was commonly done in their settings, whether they did the procedure on an same day basis, and if not, whether they expected to do the procedure on an ambulatory basis in the near future. Thus, each hospital's output was composed of responses from multiple physicians. The physician responses were made consistent within each hospital and tabulated. For example, if one or more physicians in one hospital reported doing a particular procedure on a same day basis, the procedure was assumed to be a current ambulatory procedure. This survey information was used, as the first step, to select the DRGs which will be eligible to classify same day surgeries (i.e., zero day stays).

Eligible DRGs: DRGs which might be used to pay for same day surgeries, i.e., DRGs where the procedures identified by the Irish Department of Health were often classified, were evaluated along four dimensions:

1. The physician's responses, described above, were seen as the most important criterion. To be eligible, the procedure with the highest percent of "yes" responses in the DRG had to exceed thirty percent "yes". Otherwise the DRG was eliminated from further consideration.
2. Homogeneity was another issue. Since costs are not available at the procedure level, an eligible DRG without a dominant procedure would be a source of difficulties for price setting. In view of this, it was decided that for a DRG to be eligible, the most common potentially ambulatory procedure, in that DRG, had to represent more than forty percent of all cases.
3. The candidate DRGs had to have a significant volume of reported zero day stays, for the most common ambulatory procedure code. This volume had to exceed thirty percent of all zero day stays in the DRG.
4. Finally, to preserve face validity, the low trim point for the DRG in question had to be less than or equal to two days. Otherwise, DRGs with long average lengths of stay would also be included as ambulatory surgery DRGs and this might appear unreasonable or in error.

Through the application of these criteria, thirty three DRGs were deemed to be acceptable for use in paying for outpatient surgery. Based on advice of panels of physicians held earlier at IGIF, it was decided to add DRG 39, DRG 40, DRG 41, DRG 118, and DRG 169. A list of eligible DRGs is found as Appendix A.

Setting Prices for the Eligible DRGs: The next step is to compute a value for each zero day stay case in the eligible DRGs. According to the current Portuguese DRG cost model, hospital costs are separated into those that can be assumed to vary with length of stay (e.g., physician, hotel) and those which are likely to be similar for each inpatient admission in the same DRG (e.g., laboratory, pharmacy)³.

A zero day stay in an eligible DRG will receive a price composed of the following components:

1. 100% of hotel cost for one day.
2. 100% of administration cost for one day.
3. 80% of the average physician cost for the DRG. This assumes that most of the physician time is related to performing the procedure.
4. 80% of average imaging and laboratory cost for the DRG.
- 100% 5. ~~80%~~ of the operating room cost for the DRG.
6. 80% of the supply cost for the DRG.
7. 80% of the drug cost for the DRG.
8. 80% of the "other" ancillary cost for the DRG.
9. Zero percent of intensive care unit cost as intensive care implies an overnight stay.

Setting Prices for Non-eligible DRGs: Many zero day cases are classified into DRGs which failed to meet the criteria described above. These "non-eligible" DRGs (medical and surgical) must also be assigned a value (a price). Several approaches were considered, including the maintenance of the current payment (i.e., as short stay outlier of an inpatient admission). In general, the alternatives involved assumptions as to the fraction of a particular inpatient cost which might be reasonably assigned to a zero day stay. A simpler and yet valid alternative would be to pay these cases at the rates established for outpatient visits by hospital group.

IGIF and 3M (HIS) are working together to develop a fair response to this issue.

Removing Outpatient Costs from the Inpatient Hospital Cost Data Base: As a normal part of the hospital financing process in Portugal, hospitals are required to submit their costs to IGIF's Department of Finance yearly. These costs are believed to include costs for most zero day stay cases. The methods used correspond to the pricing methods described above. Specifically:

1. Zero day stays in **eligible DRGs** will be assigned costs by department using the percents or daily rates which are also used to price these zero day stays. These costs are specific to each hospital. The corresponding costs from these cost centers are removed from the inpatient costs and set aside.
2. Medical and surgical zero day stays in **non-eligible DRGs** are assigned a value resultant from the process mentioned earlier. These costs will also be removed and set aside.

Thus, inpatient costs will be divided into true inpatient costs (no costs associated with zero day stays), costs for allowable same day surgeries, and costs for all other outpatient visits, irrespective of visit type.

4.1. PRELIMINARY RESULTS

Results are not yet fully known at this stage of the work concerning: a) prices for zero day stay cases in the allowable DRGs, and b) revised inpatient prices and revised low and high outlier trim points for inpatient discharges. Preliminary outputs indicate that allowable day surgery cost is 1.06% of the total, other zero day case cost is 0.058% for procedures and 0.669% for medical cases. The remaining inpatient acute care cost is 98.2% of the original total. Thus, allowable zero day stays are a small percent of aggregate costs. However, zero day cases are more important for a few of the smaller hospitals.

The next step will be the development of relative cost weights for same day surgeries. These weights will then be linked to inpatient relative values so that both can be modelled in the existing DRG hospital budgeting system. Until now, the ambulatory weights have been normalized separately from the inpatient weights. So far, the pattern of the preliminary same day surgery weights is pointing to differences from the inpatient relative values, which may be related to the Maryland service weight assigned to ancillary services. Since length of stay for ambulatory cases is always the same, these services may dominate the ambulatory weights and be largely responsible for the observed variation.

It is clear that there is still a long way to go; thus the authors welcome comments and suggestions on the issues raised in this paper as valuable inputs to the process of validating methods and results.

ENDNOTES

¹ See "Ambulatory Patient Groups - Definitions Manual, Version 2.0" by Averill, R. F., Goldfield, N. I., Gregg, L., and Grant, T., 3M Health Information System, 1995.

² See "Reflecting Day Case Activity in Casemix Budgets: Work in Progress in Ireland", Barton, V., Lynch, F., and Breslin, J., Department of Health, Dublin, presented at PCS/E Conference, Oslo, Norway, September, 1995; and "Casemix Budget Model, 1996, Day Cases for Modelling, 1994 Activity", Appendices A and B, Department of Health, Dublin, Ireland, May, 1995.

³ See "The Migration of Managerial Innovation", Kimberly, J., Pouvoirville, G., and Associates, Chapter 7: Portugal - National Commitment and the Implementation of DRGs, Jossey-Bass, San Francisco, EUA, 1993.

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APPENDIX A

DRG	DESCRIPTION	PHYSICIANS RESPONSES	MOST COMMON PROCEDURE	ZERO DAY STAYS	LOW TRIM
6	Carpal tunnel release	50%	95%	91%	0
36	Retinal procedures	32%	42%	50%	1
37	Orbital procedures	41%	75%	67%	1
38	Primary iris procedures	50%	80%	71%	0
39	Lens procedures with or without vitrectomy	35%	72%	29%	0
40	Extraocular procedures except orbit, age > 17	59%	24%	30%	0
41	Extraocular procedures except orbit, age 0 - 17	59%	22%	22%	0
51	Salivary gland procedures except sialoadenectomy	50%	77%	64%	0
58	T&A proc., exc. tonsilec. &/or adenoidec. only age 0-17	47%	94%	96%	0
61	Myringotomy w tube insertion age > 17	56%	85%	100%	0
62	Myringotomy w tube insertion age 0 - 17	56%	93%	100%	0
118	Cardiac pacemaker device replacement	23%	89%	52%	0
119	Vein ligation & stripping	59%	72%	47%	1
160	Hernia proc. exc. inguinal & femoral, age > 17, w/o CC	53%	40%	69%	2
162	Inguinal & femoral hernia proc. age > 17 w/o CC	68%	45%	44%	1
163	Hernia procedures age 0 - 17	68%	52%	41%	0
169	Mouth procedures w/o CC	59%	35%	49%	0
225	Foot procedures	59%	64%	32%	2
227	Soft tissue procedures w/o CC	62%	42%	63%	1
232	Arthroscopy	47%	95%	93%	0
260	Subtotal mastectomy for malignancy w/o CC	82%	40%	55%	1
262	Breast biopsy & local excision for non-malignancy	79%	74%	72%	0
266	Skin graft & 7or debrid exc. for skin ulcer or cellulitis w/o CC	73%	69%	84%	1
267	Perianal & pilonidal proced.	68%	96%	97%	1
270	Other skin, subcut tiss & breast proc. w/o CC	59%	89%	95%	0
290	Thyroid procedures	41%	64%	50%	2
291	Thyroglossal procedures	47%	99%	100%	1
311	Transurethral proced. w/o CC	47%	77%	42%	2

313	Urethral procedures age > 17 w/o CC	35%	60%	44%	2
339	Testes procedures, non- malignancy age > 17	71%	42%	31%	1
340	Testes procedures, non- malignancy age 0 - 17	71%	52%	48%	0
342	Circumcision age > 17	85%	98%	100%	0
343	Circumcision age 0 - 17	85%	99%	99%	0
361	Laparoscopy & incisional tubal interruption	50%	74%	67%	1
362	Endoscopic tubal interruption	56%	42%	51%	0
364	D&C, conization except for malignancy	79%	84%	86%	0
381	Abortion w D&C, aspiration curettage or hysterotomy	59%	98%	98%	0
394	Other O.R. proc. of the blood and the blood forming organs	68%	44%	47%	1